M0370084
TASK2748
cc: Tom
Wayne
Lynn

cotter

November 4, 2008

Paul Baker
Division of Oil, Gas & Mining
1594 West North Temple, Suite 1210
P. O. Box 145801
Salt Lake City, UT 84114-5801

Re: Mine Permit Amendment Application for Cotter Corporation, Papoose Mine, M/037/084

Dear Mr. Baker:

Enclosed is a draft copy of our proposed amendment for Cotter Corporation's Papoose Mine, permit number M/037/084.

Cotter Corporation is proposing to amend the existing permit to allow for an additional 5 acres of mining. This additional acreage will extend from the southeast end of the existing mine permit area.

I have updated the sections of the amendment application to conform to the Division of Oil, Gas & Mining Non-coal Rules sections R-647-4-104, -105, -106, -109, -110, -112, and -113. Consequently the Form MR-REV-att that is attached indicates that every section of the permit has sections to replace.

Also included is a Cultural Resource Inventory Report prepared by ERO Resources Corporation for the proposed mine permit amendment area.

Thank you for your attention to this matter. If you have any questions, please call me at 970-864-7347.

Sincerely,
COTTER CORPORATION

Glen Williams
Manager of Mining

limemine-dogm ltr

Cotter Corporation - West Slope Operations
P.O. Box 700, 28151 DD Road, Nucla, CO 81424 USA
Telephone (970) 864-7347
Fax (970) 864-7287

0002

Form MR-REV-att (DOGM – Revise/Amend Change Form)
(Revised September 14, 2005)

Application for Mineral Mine Plan Revision or Amendment

Operator: Cotter Corporation

Mine Name: Papoose Mine **File Number:** M/037 /084

Provide a detailed listing of all changes to the mining and reclamation plan that will be required as a result of this change. Individually list all maps and drawings that are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages, or other information as needed to specifically locate, identify and revise or amend the existing Mining and Reclamation Plan. **Include page, section and drawing numbers as part of the description.**

DETAILED SCHEDULE OF CHANGES TO THE MINING AND RECLAMATION PLAN

			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
☐ ADD	☒ REPLACE	☐ REMOVE	General Information
☐ ADD	☒ REPLACE	☐ REMOVE	Maps, Exhibit B
☐ ADD	☒ REPLACE	☐ REMOVE	Maps, Figure 2
☐ ADD	☒ REPLACE	☐ REMOVE	Operation Plan
☐ ADD	☒ REPLACE	☐ REMOVE	Impact Assessment
☐ ADD	☒ REPLACE	☐ REMOVE	Reclamation Plan
☐ ADD	☒ REPLACE	☐ REMOVE	Variance
☒ ADD	☐ REPLACE	☐ REMOVE	Surety
☐ ADD	☒ REPLACE	☐ REMOVE	Attachment 'A', Legal Description
☐ ADD	☒ REPLACE	☐ REMOVE	Exhibit F-1, Reclamation Plan Map
☒ ADD	☐ REPLACE	☐ REMOVE	Cultural Resource Inventory
☐ ADD	☐ REPLACE	☐ REMOVE	
☐ ADD	☐ REPLACE	☐ REMOVE	

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments and obligations, herein.

Glen Williams
Print Name

Glen Williams, Mgr of Mining
Sign Name, Position

Date

Return to:

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple, Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
Phone: (801) 538-5291 Fax: (801) 359-3940

O:\FORMS\MR-REV-att.doc

FOR DOGM USE ONLY:
File #: M/ /
Approved:
Bond Adjustment: from ($)
to $

RECEIVED
NOV 06 2008
DIV. OF OIL, GAS & MINING

I General Information

Cotter Corporation is conducting a large scale shallow open pit limestone mining operation in the NW ¼, SW ¼, and the SW ¼ of SE ¼ of Sec 36, T29 ½ S, R24E in San Juan County, Utah. The present mine permit was amended from our previous permit in 2001. The limestone deposit consists of the upper unit of the Pennsylvanian Hermosa Formation. The affected acreage is Utah State land which is controlled by a State Lease (ML-45609). Accordingly, the Division of State Lands and Forestry has been given a copy of this Amended/Revised mine plan. The proposed mine site is at an elevation of 6740 feet sloping from 8-16% to the west toward an unnamed intermittent tributary of Big Indian Wash and southwest toward Big Indian Wash. The surface is 20-30% bare limestone and 70-80% is covered with a very thin layer (usually less than 6") of soil. The mine area is vegetated at a moderate density by mature pinon and juniper trees with very sparse small shrubs and grass understory.

Limestone is the only mineral product to be mined. Any of the sparse soil to be stripped will be stockpiled and used later for reclamation purposes. The only waste materials generated consist of undersize product consisting of limestone, soil, and sandstone which are screened out following the crushing process and minor amounts of courser material which are rejected due to size. Much of the fine rejects are being used to surface the pit road and storage areas, and sold elsewhere as road base material. A market for the coarse rejects, such as rip-rap use, will also be sought in order to minimize the amount of waste rock left at the mine site. Annual production is currently about 95,000 tons of limestone.

II Maps

Attached as Exhibit B is a site map showing the existing and proposed mine facilities.

Attached as Figure 2 is a regional map showing the location of the mine area.

III Operation Plan

A. Operation

The anticipated sequence for the mining operation will be as follows:

1. Trees and brush will be stripped, windrowed or piled with a front-end loader.
2. The thin, sporadic soil will be stripped and stockpiled. Most of the soil will be stored on the uphill or northeast side of the stripped area to facilitate ease in redistribution during final reclamation. A smaller amount will be used on the downhill side and piled in a berm for stormwater control. (see Exhibits F-1 and F-2)
3. Blast holes will be drilled with a drill machine supplied with a water injection system to minimize the amount of dust produced.

4. Explosives will be loaded and the holes shot approximately two or three times per year. In accordance with MSHA regulations, any possible area of approach will be closed by barriers or fences and be guarded during blasting. These fences and barriers will also hinder access to the highwall of the pit. The pit is not anticipated to be more than 20 feet deep.
5. The broken rock will be mucked and trammed to the crusher by means of a rubber tired loader.
6. Rock will be crushed and screened to a product size of minus 10" to plus ½". This currently requires only a primary crushing operation employing a portable jaw crusher. Water sprays will be used as necessary to minimize dust emissions during crushing. The particle size of the stockpiled material and any undersize reject pile should be large enough to preclude dust emissions due to wind. The undersize reject pile will be sprayed with water as necessary to control fugitive dust. Dust emissions will be regulated under Approval Order #DAQE-378-95 from the Utah Division of Air Quality.
7. The crushed product will be transported by conveyor or loader to the stockpile area. The equipment storage pad is of sufficient size (0.67 acres) to allow for truck turning and loading. The crushing and stockpile areas move southeastward, within the pit boundary, periodically as needed.

B. Access

Access to the mine site is off San Juan county road #370 (Lisbon Valley Road) approximately 1.3 miles southeast of the intersection with San Juan county road #307 (Big Indian Valley Road). Approximately 460 feet of new access road 20 feet wide has been constructed in accordance with the encroachment requirements of the San Juan county road department engineer. A culvert of appropriate size has been installed to cross the drainage on the south side of County road #370. Construction of the remaining 425 feet of access road to the mine area (885 feet total access road) consisted of upgrading an existing seismic exploration road, along with installation of two small culverts. The access road has been improved as necessary. A dust suppressant will be applied as necessary to minimize the suspension of dust. The entire length of the access road is located on the Utah State leased land. As a security measure a gate has been installed on the northwest end of the mine area in order to deter access to the mine site by unauthorized persons.

C. Acreage of Disturbance

The acreage disturbed by the existing operation is estimated to be:

		Acres
1)	Access Road	
	a) new	0.16
	b) upgrade of existing road	0.20
2)	Equipment Storage Pad	0.67
3)	Topsoil Stockpiles	4.90
4)	Mine area and cleared area remaining	41.07
Total number of acres presently disturbed		47.00
Permit area remaining		0.00
Total permitted area		47.00
Total new area to be permitted		5.00
Total area proposed for permitting		52.00

Exhibit B shows the newly proposed permit area.

D. Surface Facilities

When operations are in progress, a large truck van trailer with a control room, generator set and tool and lubricant storage room is on site. For security this unit is moved to Nucla during extended periods of inactivity. A small camper trailer containing a portable toilet is always at the site. A larger enclosed portable toilet may also be used should on-site personnel requirements increase.

A fueling station has been established within a bermed and lined area to control spillage. (See Exhibit B)

E. Storm Water Control

During mining operations, the pit and crushing area will remain a sufficient distance east of the drainage to generally preclude the potential for sediment to enter surface waters of the state. Also, since the mining operation will be very near the crest of the ridge, very little storm water run-on is anticipated to enter and subsequently exit the mine area. A catchment pond with a silt fence has been constructed below the pit area to minimize sedimentation from this area leaving the site and reaching the adjacent drainage. An additional berm of soil has been placed along the downhill, or southwest, side of the disturbed area to route stormwater into the pit toward the catchment pond. Any storm water is regulated under Storm Water Permit No. UTR000257, issued by the Utah Division of Water Quality.

All mine related trash will be removed from the property at the completion of operations. In addition, activities will be conducted so as not to present fire hazards. Portable toilet facilities will be provided during periods of operation.

F. Exploration/Development Drilling

Cotter Corporation will, from time to time, conduct exploration drilling operations. Should the proposed drilling operations lie outside the permitted mine area, we will file for an exploration permit with the Division.

G. Site Access Controls and Other Lessee Notifications

As previously mentioned, barriers, such as windrows of stripped trees, fences, gates and signs will be used to deter entry to the mining area by the public and livestock during mining operations and later reclamation activities as necessary. The other lease holders of this parcel of state land have been notified of Cotter's intent and application for revision or amendment to permit # M/037/084. These other lessees (Paul D. Redd of Monticello, Utah – Grazing Permit; Gulf Production Corp. of Oklahoma City, OK, ML48278 – Oil, Gas, and Hydrocarbons lease; and Robert Lufkin of Phoenix, Arizona, ML46678 – Metalliferous Minerals Lease; and BUA USA Inc, Moab, Utah, ML51447 – Potash Lease) will be allowed access to the mining area if needed. None of the fences will be constructed in such a manner as to deny livestock access to existing watering places. There will be no other disturbance to any of the other surface resources on this State lease outside of the 52 acres covered by this permit.

H. Water Use & Hydrologic Regime

All water to be used in this operation is expected to be purchased from La Sal Livestock in La Sal, Utah and hauled to the mine site. No ground water has been encountered in the mining operation. Since the mine site is near the crest of the ridge, there is insufficient recharge area to contribute ground water to the area, especially at the shallow pit depths of 20 feet or less. The underlying sandstone is poorly cemented and very permeable, thereby allowing infiltration, so no seeps are anticipated even at the base of the limestone bed.

IV Impact Assessment

As previously stated, no adverse impacts are expected to surface or ground water regimes. Soil resource impacts will be addressed through the variances under "Reclamation Plan" (following) as are slope stability and erosion control. There have been no state or federal threatened or endangered species encountered and no potential impacts are expected. Periodically, mining personnel are instructed to report any raptor sitings near the mine. Supervisory personnel are also watching for raptor nesting sites, especially during springtime. To date, no nesting sites have been observed. No cultural sites have, as yet, been encountered

within either the previously permitted area or the newly proposed area (see ERO State Project Number U-08-ER-0883S, attached).

V Reclamation Plan

A. During Operations

Before any portion of the pit is abandoned, the highwall will be cut or backfilled with reject material to a slope of less than 1V:2H. The available soil will be spread and scarified, then seeded with the attached seed mixture (see Exhibit G). Measures will be taken to avoid any unnecessary compaction prior to and during seeding.

Currently, the topsoil stockpiles exhibit a very rough texture due to the many pieces of over-sized limestone incorporated in it. At present, the stockpiles have naturally re-vegetated and have not shown any adverse affects from heavy rainfalls.

A few of the original trees will be scattered across any reclaimed areas.

The original plan called for concurrent final reclamation of unused portions of the pit. However, the need for extra space to stockpile different products and spare equipment was not fully anticipated. Consequently, Cotter had decided to continue only with backfilling fines material against the northeast highwall as an enhancement to future reclamation. These areas of backfilled highwall will have soil spread over them, and be re-vegetated with the appropriate seed mix to facilitate reclamation of this area of the pit. As more space becomes available, Cotter may complete reclamation in small unused areas of the pit (see revised Exhibit F-2, attached).

Current land use is for mining in disturbed areas and wildlife habitat and grazing in undisturbed areas.

The vegetation survey conducted in 1995 employed a line intercept method on two transects. Ground cover exhibited 13.5% vegetation, litter was 25.5%, rock/rock fragments 24%, and bare ground was 37%. The four predominant perennial species were Pinon Pine, Utah Juniper, Datil Yucca, and Torrey Mormon Tea.

B. Final Reclamation

Post mining land use will be for wildlife habitat and grazing. Reclamation and re-vegetation should result in much more diverse plant species and, consequently, a much improved habitat.

After mining operations cease and it is determined the access road and stockpile areas are no longer needed (assuming the Utah Division of State Lands and Forestry does not want the road left in place) they will be reclaimed according to state reclamation standards.

Also, any remaining reject material that has not been sold will be utilized during final reclamation for erosion control measures, or in the case of fines reject material as a subsoil before topsoil application.

An evaluation of methods for spreading of topsoil and seeding operations will determine the depth to which the seed bed should be loosened. The disturbed area will be ripped (or otherwise scarified) as conditions allow.

Any seeding operations will occur in the fall (preferably in mid-October) and will be applied by a broadcast seeder.

Remaining windrowed trees and any large rock left from sizing operations will be scattered and, or piled across the reclaimed area concentrating on those areas more susceptible to erosion.

Trees and rocks will be picked up and placed utilizing either a front end loader or excavator. Application of 40 pounds per acre of nitrogen and 60 pounds per acre of phosphorous fertilizer will occur following seeding.

Berms and water bars may be placed, as needed, to minimize erosion prior to seeding. This will also minimize sediment delivery to the nearby drainage.

As a second option to the previously granted variance, any fine reject materials which remain after closure of operations can be distributed as a subsoil amendment before spreading topsoil. As the Division of Oil, Gas, and Minerals suggested, maintaining at least one foot of this subsoil material could lessen the required thickness of the topsoil required. At the time of closure, however much of this material remains, could be used to achieve the maximum topsoil coverage.

VI Variance

As the mining operations advance to the southeast, less soil cover will be encountered. As a result, Cotter Corporation requested a variance under rule R647-4-111. The reclamation plan (in areas of thin soil cover) will be to concentrate the available soils into "islands" or isolated areas to provide the necessary soil requirements for generation of vegetation. These "islands" will be evenly scattered throughout the mined area.

As indicated in the Large Mine Permit application (under III Operation, part 16, Vegetation) two transects using the Line Intercept method to survey cover averaged 24% rock/rock fragments. In some of the worst areas the topsoil may range between 1"-6" in thickness. When considering the rough nature of the limestone surface immediately underlying the soil, it may not be feasible to reasonably separate the minimal amounts of soil from the limestone during the stripping phase as the mine advances to the southeast boundary of the permit area. Due to these difficulties, it is anticipated that it will be difficult to create the 12" thick "islands" on 5% of the reclaimed acreage. Even at this low estimate, we should manage a net gain in available grazeable vegetation when compared to the present conditions.

Berms and water bars may be placed as necessary to minimize erosion during re-vegetation. This will also prevent sediment delivery to the nearby drainage. The land will thus be returned to the pre-mining use of livestock and wildlife grazing.

VII Surety

The additional 5 acres should increase the amount of reclamation work required to reclaim the mine area by approximately 10%, based on a 10% increase in the affected area to re-grade, topsoil, and re-vegetate.

Attachment "A"

Cotter Corporation
Operator

Papoose
Mine Name

M-037-084
Permit Number

San Juan County, Utah

The legal description of lands to be disturbed is:

52.0 acres (MOL) within an area described as:

Beginning at a point 1498 feet South 40° East of the Northwest corner of Section 36, Township 29½South, Range 24 East, Salt Lake Principal Meridian, San Juan County, Utah;

Thence 398 feet South 39° 47' East; thence 255 feet South 53° 06' West;
Thence 563 feet South 32° 05' East; thence 469 feet South 34° 39' East;
Thence 218 feet South 21° 34' East; thence 452 feet South 33° 11' East;
Thence 366 feet South 34° 48' East; thence 200 feet South 37° 16' East;
Thence 645 feet South 34° 20' East; thence 171 feet South 32° 07' East;
Thence 409 feet South 34° 36' East; thence 84 feet South 15° 12' West;
Thence 92 feet South 13° 53' West; thence 156 feet South 12° 10' East;
Thence 77 feet South 26° 13' East; thence 87 feet South 31° 52' East;
Thence 150 feet South 29° 35' East; thence 122 feet South 34° 43' East;
Thence 21 feet South 16° 41' East; thence 215 feet North 89° 28' West;
Thence 165 feet North 87° 34' West; thence 236 feet North 90° 0' West;
Thence 238 feet North 26° 40' West; thence 233 feet North 33° 58' West;
Thence 259 feet North 27° 33' West; thence 259 feet North 31° 21' West;
Thence 576 feet North 30° 11' West; thence 283 feet North 31° 33' West;
Thence 282 feet North 35° 28' West; thence 243 feet North 31° 05' West;
Thence 199 feet North 35° 32' West; thence 202 feet North 15° 10' West;
Thence 217 feet North 37° 05' West; thence 90 feet North 15° 33' West;
Thence 342 feet North 26° 53' West; thence 294 feet North 7° 07' West;
Thence 129 feet North 54° 15' West; thence 124 feet North 16° 10' West;
Thence 151 feet North 34° 09' West; thence 238 feet North 28° 22' East;
Thence 343 feet North 41° 33' East, to the place of beginning.

In addition, an access road has been constructed and includes another 0.16 acres falling within an area 10 feet on either side of a centerline beginning 1513 feet South 40° East of the Northwest corner of Section 36, Township 29½ South, Range 24 East, Salt Lake Principal Meridian, San Juan County, Utah;
Thence 508 feet North 47° East; thence 164 feet North 81° East;
Thence 112 feet North 67° East; thence 102 feet North 51° East;
Thence 79 feet North 9° East, where the road connects to San Juan County Road #370.

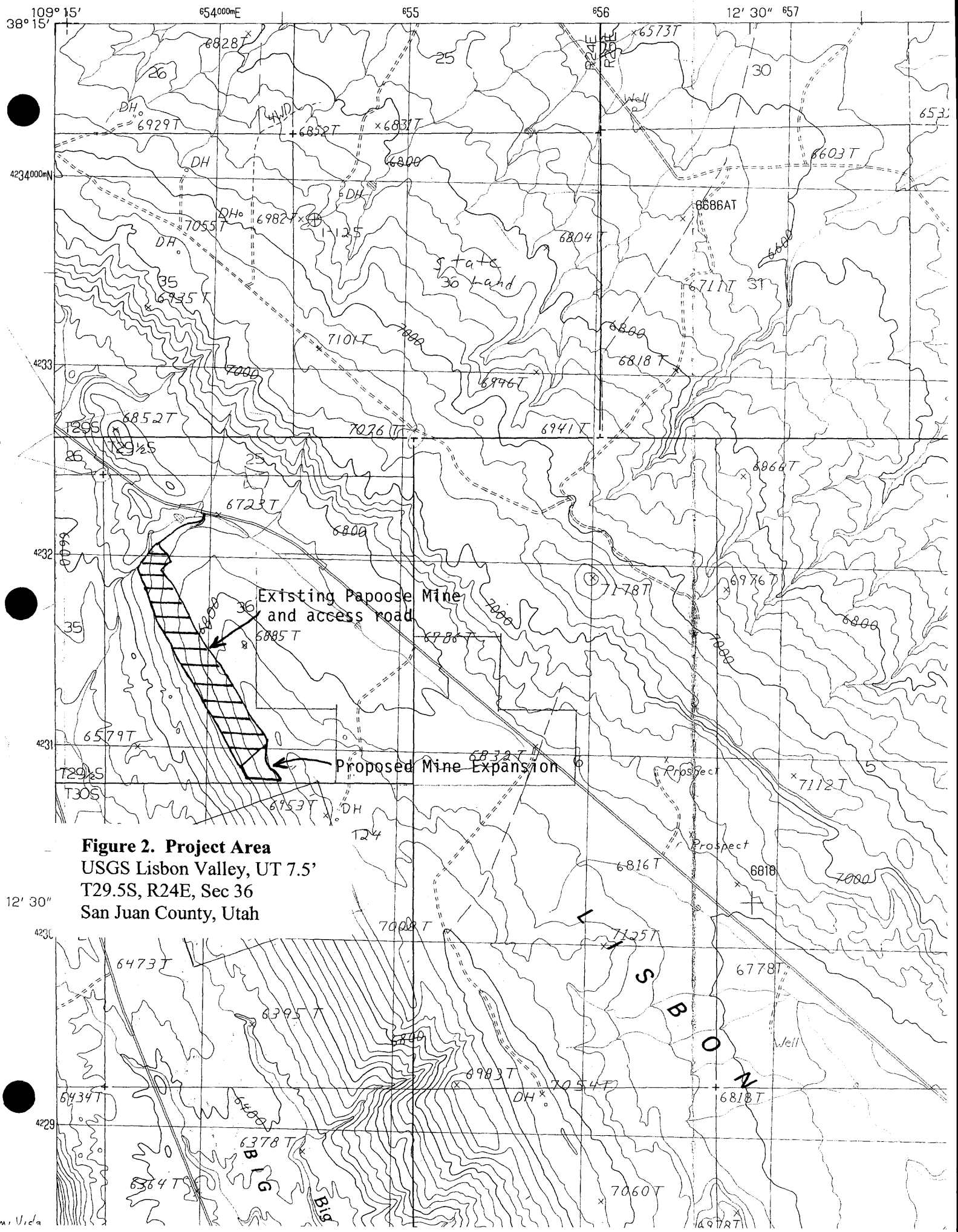

Figure 2. Project Area
USGS Lisbon Valley, UT 7.5'
T29.5S, R24E, Sec 36
San Juan County, Utah

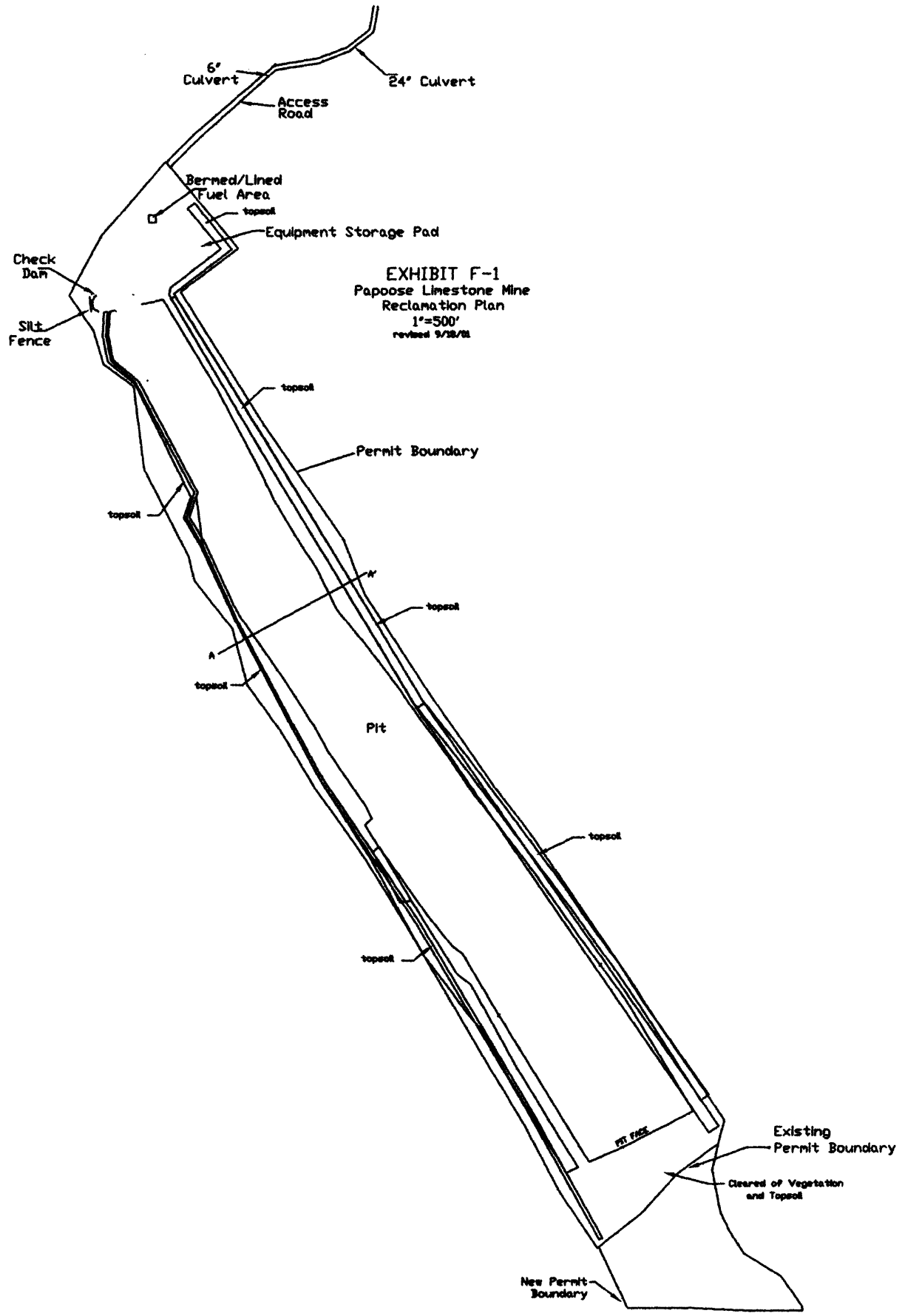
6"
Culvert
24" Culvert
Access
Road
Bermed/Lined
Fuel Area
topsoil
Equipment Storage Pad
Check
Dam
Silt
Fence
EXHIBIT F-1
Papoose Limestone Mine
Reclamation Plan
1"=500'
revised 9/18/01
topsoil
Permit Boundary
topsoil
A'
topsoil
A
topsoil
Pit
topsoil
topsoil
PIT FACE
Existing
Permit Boundary
Cleared of Vegetation
and Topsoil
New Permit
Boundary

EXHIBIT F-2

Papoose Limestone Mine

Reclamation Plan

Cross-Section

1"=60'

Looking Northwest

revised 11/8/01

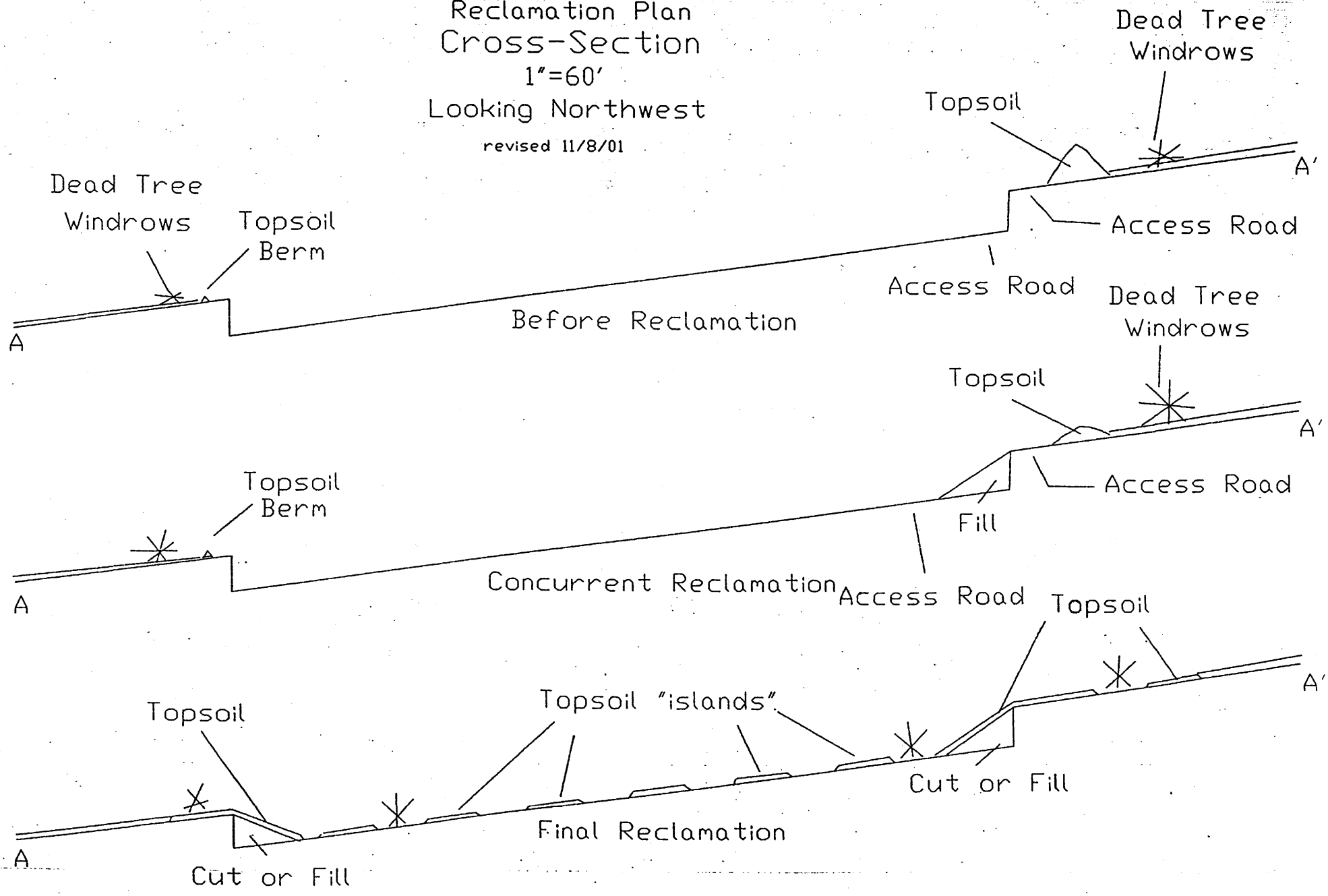

EXHIBIT G

Recommended Revegetation list for Cotter Corporation's Papoose Mine, M/037/084.

Common Name	*Rate lbs/acre (PLS)
Bluebunch Wheatgrass	2.0
ELLA, Thickspike Wheatgrass	2.0
POAM, Big Bluegrass	0.5
Bozoisky Russian Wild Rye	1.5
Indian Ricegrass	2.0
Ladak Alfalfa	0.5
Lewis Flax	0.5
Palmer Penstemon	0.5
Small Burnett	1.0
Wyoming Big Sage	0.2
Fourwing Saltbrush	2.0
Rubber Rabbitbrush	0.5
Forage Kochia	0.5
Rocky Mountain Penstemon	0.5
Total pounds per acre	14.2

*Rate is recommended for broadcast seeding. If drill seeded, reduce rate by 1/3.

Prepared by DOGM on September 13, 2001

COVER PAGE
Must Accompany All Project Reports
Submitted to Utah SHPO

Project Name: Papoose Mine Expansion Project **State Proj. No.:** U-08-ER-0883S

Report Date: September 5, 2008 **County(ies):** San Juan County

Principal Investigator: Sean Larmore

Field Supervisor(s): Sean Larmore

Records search completed at what office(s)? Utah SHPO online database

Record search date(s): September 8, 2008

Area Surveyed – Intensive *(≤15 m intervals)*: 5 **acres** **Recon/Intuitive** *(>15 m intervals)*: _____ **acres**

7.5' Series USGS Map Reference(s): Lisbon Valley

SITES REPORTED	COUNT / SMITHSONIAN SITE NUMBERS
Archaeological Sites	0
Revisits (no inventory form update)	0
Updates (updated IMACS site inventory form attached)	0
New recordings (IMACS site inventory form attached)	0
Total Count of Archaeological Sites	0
Historic Structures (USHS 106 site info form attached)	
Total National Register Eligible Sites	0

Checklist of Required Items, attached

1. X **Copy of the final report**
2. X **Copy of 7.5' Series USGS map with surveyed/excavated area clearly identified**
3. **Completed IMACS site inventory forms**
   - ___ **Parts A and B or C**
   - ___ **IMACS Encoding Form**
   - ___ **Site Sketch Map**
   - ___ **Photographs**
   - ___ **Copy of the appropriate 7.5' Series USGS map with site location marked and Smithsonian site number clearly labeled**
4. X **Completed "Cover Page" accompanying final report and survey materials**

For UDSH office use only

CLASS III CULTURAL RESOURCE INVENTORY
PAPOOSE MINE EXPANSION PROJECT
SAN JUAN COUNTY, UTAH

NEGATIVE REPORT

Prepared for—

Cotter Corporation
P.O. Box 700
28151 DD Road
Nucla, Colorado 81424

Submitted to—

Utah State Lands
P.O. Box 141107
Salt Lake City, Utah 84114

Prepared by—

ERO Resources Corporation
1075 Main Avenue, Suite 222
Durango, Colorado 81301
(970) 422-2136

Written by—

Sean Larmore
Principal Investigator

September 5, 2008

State of Utah Permit No. 40
ERO Project No. 4283

ABSTRACT

ERO Resources Corporation (ERO), on behalf of Cotter Corporation, conducted a Class III cultural resource inventory of about 5 acres for the Papoose Mine Expansion project. The project area is located in San Juan County, Utah, T29 ½ S, R24E, Section 36. No cultural resources were located. A determination of "No Historic Properties Affected" is recommended for the project, pursuant to 36 CFR 800.5 of the National Historic Preservation Act (NHPA, 1966, as amended).

Certification of Results,

Sean Larmore, Principle Investigator

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Description of the Project Area 1
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Evaluation of Research 3
Summary and Management Recommendations 3

FIGURES

Figure 1. Project location. 2

CLASS III CULTURAL RESOURCE INVENTORY
PAPOOSE MINE EXPANSION PROJECT
SAN JUAN COUNTY, UTAH
NEGATIVE REPORT
SEPTEMBER 5, 2008

Introduction

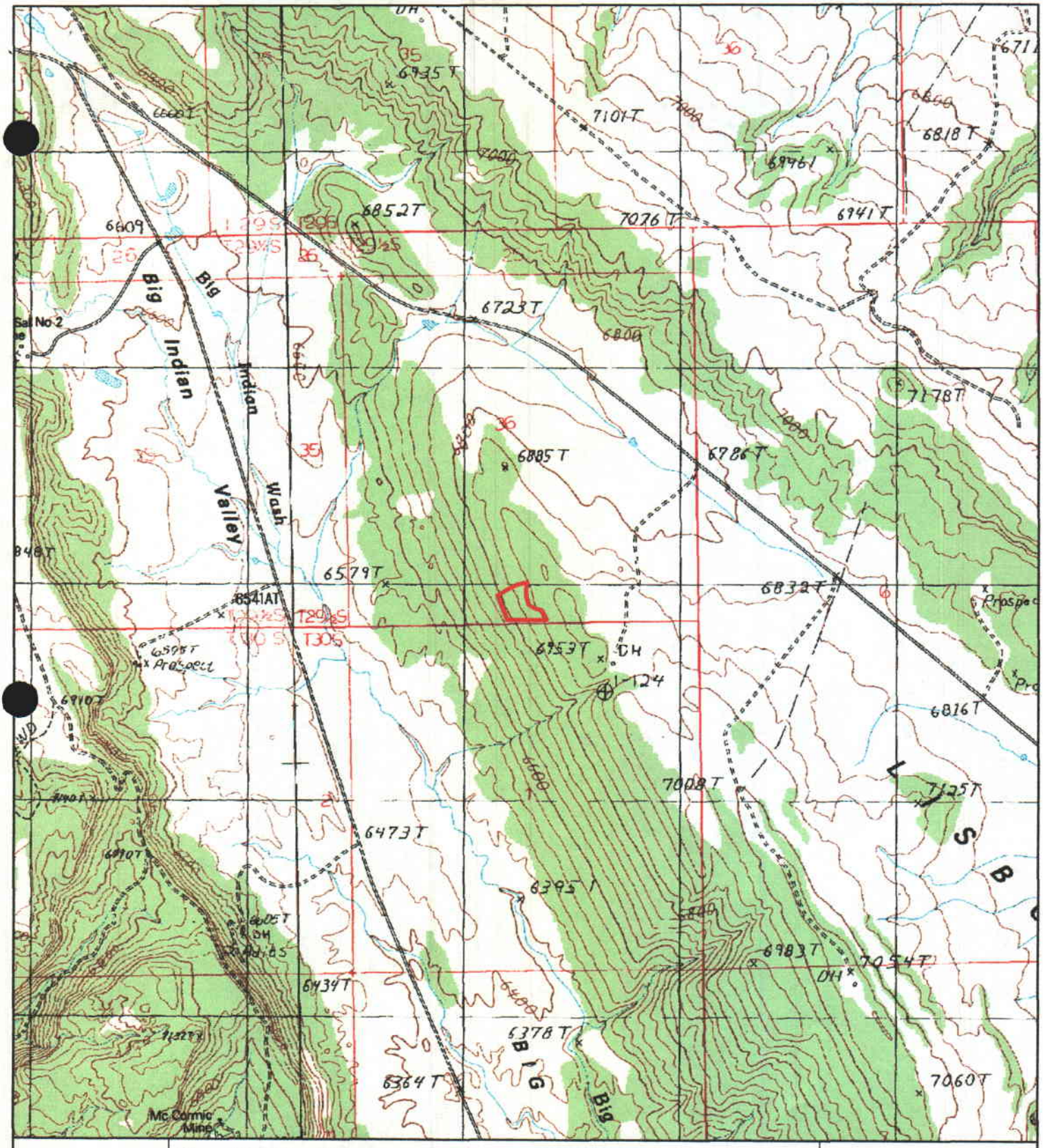
Cotter Corporation is proposing to expand their Papoose Mine farther southeast along an unnamed hogback, which will encompass about 5 acres of new disturbance. A permit is required from Utah State Lands.

Fieldwork was conducted on September 4, 2008. The cultural resource inventory was conducted by Sean Larmore, cultural resources principal investigator, accompanied by Glen Williams of Cotter Corporation. The boundaries of the new permit area were flagged to facilitate survey. A buffer of 50 feet was surveyed beyond the flagged perimeter.

Description of the Project Area

The project area is located in Section 36, T29 ½ S, R24E, 6th Principal Meridian, San Juan County, Utah and is located on the Lisbon Valley 7.5' U.S. Geological Survey quadrangle.

Specifically, the project area is located on the southwest face of a prominent hogback ridge within Big Indian Valley. The hogback dips about 25 degrees and is mantled by eolian sandy deposits over near-surface limestone bedrock. Vegetation is typical piñon-juniper woodland and mountain mahogany.



ERO

ERO Resources Corp.
342 Clarkson Street
Denver, CO 80218
(303) 830-1188
Fax: (303) 830-1199

Class III Cultural Resource Inventory
Papoose Mine Expansion Project
San Juan County, Utah

USGS Lisbon Valley, Utah 7.5' Quadrangle
Zone 12, NAD 83
Township 29 1/2S, Range 24E, Section 36

500 250 0 500 Meters

N

1:24,000

Figure 1.
Project Location

Prepared for: Cotter
File: Fig1.pdf
September 2008

Cultural Overview

A detailed cultural context is not warranted here given the size of the project area and the negative findings. The project area is located on the dry side of Dry Valley, with significant Ancestral Puebloan occupation located along the east side of the Colorado River west of the project area, and upland hunter-gatherer occupation of the La Sal Mountains north of the project area. Significant findings were not expected.

File and Literature Review

A file and literature review was conducted through Utah's new online database. Several previous inventories have been conducted in the area, including two previous inventories for the current Papoose Mine permit area. Findings were negative for the Papoose Mine inventories (U94LA348). One previous project overlaps the new permit area – Seismic Lines 1A and 1B (U89AF0167). Results were negative for this inventory as well. A second seismic line extending along the base of the hogback also was negative (U83LA0198).

Evaluation of Research

As anticipated, no cultural resources were located during the inventory. Unlikely topography for human occupation is responsible for the lack of cultural resources. The project fulfilled the requirements for cultural resource inventory under Section 106 of the NHPA (1966, as amended).

Summary and Management Recommendations

Results of the Class III cultural resource inventory of the Papoose Mine Expansion project were negative for cultural resources. The total area inventoried is approximately 5 acres. A determination of "No Historic Properties Affected" is recommended for the project, pursuant to 36 CFR 800.5 of the NHPA.

faxed 8-21-95 PM

Jon Showalter
COTTER CORP
P.O. Box 700
Nucla, CO 81424

DATE RECEIVED: 08/14/95
DATE REPORTED: 08/21/95

Colorado State University
Soil, Water and Plant Testing Laboratory
Natural and Environmental Sciences Bldg – A319
Fort Collins, CO 80523

(970) 491-5061 FAX: 491-2930

BILLING: S19506

ATTACHMENT B

RESEARCH SOIL ANALYSIS

Lab #	Sample ID #	pH	mmhos/cm EC	Lime Estimate	% O.M. (organic matter)	ppm NH_4HCO_3–DTPA Extract NO_3–N	P	K	Zn	Fe	Mn	Cu	Texture Estimate
R936	Papoose Topsoil	8.0	0.6	High	4.8	2	2.8	205.0	0.6	25.2	9.0	2.4	SandyLoam

Lab #	Sample ID #	Plant Species	Irrigated	--Recommendation-- lbs/A N	P_2O_5	K_2O
R936	Papoose Topsoil	Native Grasses	No	40	60	0
R936	Papoose Topsoil	Grasses	Yes	120	80	0

EXHIBIT D

ECOLOGICAL SITE DESCRIPTION
PINYON JUNIPER WOODLAND
COLORADO FIELD OFFICE

Ecological Site Name: Shallow Loamy Mesa Top PJ #141

Ecological Site Number: GF - 039XY141CO
GF - 048XY141CO

Date: 03/01/95

Author's Initials: TO/CS/JA/DR/JH/BK

PART A: PHYSICAL CHARACTERISTICS

1. **Soil Narrative:**

   a. The soils in this site are shallow, well drained, and occur on gently sloping mesa tops. They formed in loess, colluvium and residual sandstone. Permeability is moderate above the bedrock. The available water capacity is very low. Erosion by water is slight to moderate and the hazard of erosion by wind is moderate. The natural soil fertility is low.

   b. List of Soil Taxonomic Units or Soil Mapping Units for all soils included in this site:

SSA	Soil Series	Surface Texture	Slope Ranges	Phase
671	Longburn	CBV Sandy loam	1-12%	-
671	Arabrab	Fine sand	1-12%	-

2. **Landscape Factors**

   a. **Physiography:**

      1. Elevation: Low: 7000 ft. High: 7800 ft.

      2. Percent Slope: Low 1% High 12%

      3. Nearly level to gently sloping areas on mesa tops.

3. **Climate Factors**

a. Hard freeze free period: 180 to 220 days (24°F)

b. Freeze-free period: 160 to 180 days (28°F)

c. Frost-free period: 145 to 170 days (32°F)

d. Mean annual precipitation: 15 to 18 inches

e. Mean annual air temperature: 47 to 50°F

f. Mean annual soil temperature: 49 to 52°F

g. Moisture and temperature distribution:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PPT												
HIGH	2.9	2.2	2.7	1.8	1.7	1.1	2.9	2.7	2.1	3.0	2.0	2.7
MEAN	1.9	1.4	1.7	1.2	1.1	0.6	1.9	1.8	1.3	1.7	1.3	1.8
LOW	0.8	0.5	0.5	0.6	0.4	0.1	0.8	0.6	0.6	0.6	0.7	0.6
PERCENT	11	8	10	7	6	3	11	10	7	10	7	10
TEMP												
HIGH	39.6	43.8	49.8	59.8	70.5	81.8	86.9	84.3	77.4	65.7	50.2	41.1
MEAN	29.2	33.8	38.0	46.5	56.4	66.6	72.3	70.1	63.6	52.7	39.2	31.0
LOW	18.8	21.8	26.3	33.2	42.3	51.5	57.7	55.8	49.8	39.7	28.2	20.9

4. **Vegetation Factors - Climax Plant Community:**

a. Site Description Narrative:

When this site is at or near its potential, pinyon pine and Utah juniper dominate the site and make up over 80 percent of the plant community. Understory production is very limited and provides marginal amounts of forage for livestock and or wildlife. It does provide good escape cover and thermal cover for deer. When the tree canopy cover exceeds 30 percent diversity, both plant and animal, drops to its lowest level.

When the tree canopy ranges from 10 to 30 percent, a wide variety of grasses, forbs and shrubs will also be present in addition to the pinyon pine and Utah juniper. Muttongrass, needleandthread, Indian ricegrass and bottlebrush squirreltail are the principal grasses. Forbs usually present include Wrights birdbeak, silvery lupine, rocky mountain penstemon, Crandall penstemon and Hoods phlox. Shrubs usually present include cliff fendlerbush, Torrey mormontea, low rabbitbrush, datil yucca, antelope bitterbrush, mountain mahogany and Utah serviceberry. During this tree canopy stage, diversity of plant and animal species will reach its peak.

When the tree canopy cover ranges from 0-10%, the previously mentioned species will generally be present with the grasses and forbs producing 80 to 90 percent of the total production. When the tree canopy level is reduced by fire, chaining and/or application of herbicides, forage production will be at its highest level for big game animals as well as domestic livestock.

b. Vascular Plant Community Composition (by air-dry weight):

Plant Symbol	Common Name	Productivity by Canopy Classes 0 -15 %	15 -30%	30 - +%
GRASSES AND GRASSLIKES				
POFE	MUTTONGRASS	30 - 35	20 - 25	5 - 10
ORHY	INDIAN RICEGRASS	10 - 15	5 - 10	0 - 1
STCO4	NEEDLEANDTHREAD	5 - 10	0 - 5	0 - 1
ELEL5	BOTTLEBRUSH SQUIRRELTAIL	0 - 5	0 - 5	0 - 1
FORBS				
LUAR3	SILVERY LUPINE	1 - 5	1 - 5	0 - 1
COWR2	WRIGHT'S BIRDBEAK	0 - 1	1 - 3	0 - 1
SPCO	SCARLET GLOBEMALLOW	1 - 3	1 - 3	0 - 1
PEST2	ROCKY MOUNTAIN PENSTEMON	1 - 3	1 - 2	0 - 1
PECR5	CRANDALL'S PENSTEMON	1 - 3	1 - 2	0 - 1
ERUM	SULFUR BUCKWHEAT	1 - 3	1 - 2	0 - 1
PHHO	HOODS PHLOX	0 - 1	0 - 2	0 - 1
COUM	BASTARD TOADFLAX	0 - 1	0 - 2	0 - 1
POAV	PROSTRATE KNOTWEED	0 - 1	0 - 1	0 - 1
PEPU7	ROCK GOLDENROD	0 - 1	0 - 1	0 - 1
PPFF	OTHER PERENNIAL FORBS	0 - 1	0 - 1	0 - 1
SHRUBS & HALFSHRUBS				
FERU	CLIFF FENDLERBUSH	0 - 3	0 - 5	0 - 2
EPTO	TORREY MORMONTEA	0 - 3	0 - 5	0 - 1
CHHU2	LOW RABBITBRUSH	0 - 5	0 - 5	0 - 1
YUBA	DATIL YUCCA	0 - 3	0 - 5	0 - 1
PUTR2	ANTELOPE BITTERBRUSH	0 - 3	0 - 5	0 - 1
CEMO2	TRUE MOUNTAIN MAHOGANY	0 - 3	0 - 5	0 - 1
AMUT	UTAH SERVICEBERRY	0 - 3	0 - 5	0 - 1
TREES				
PIED	PINYON PINE	0 - 5	5 - 15	20 - 60
JUOS	UTAH JUNIPER	0 - 10	10 - 20	20 - 60

c. Total Annual Understory Production by Canopy Class in an Average Year:
(all production below 4 1/2 feet, air-dry)

0 - 10%	650	to	800 lbs. per acre
10 - 30%	300	to	600 lbs. per acre
30 - +%	50	to	150 lbs. per acre

d. Total Annual Production by Canopy Class in an Average Year:
(includes all overstory and understory production, air-dry)

0 - 15%	700	to	900 lbs. per acre
15 - 30%	600	to	800 lbs. per acre
30 - +%	450	to	700 lbs. per acre

e. Animal Preference Values by Species 1/

Plant Symbol	Common Name	ANIMAL PREFERENCE CSH	DEP	GSS BBM
GRASSES AND GRASSLIKES				
POFE	MUTTONGRASS	P P P	P P P	D D D
ORHY	INDIAN RICEGRASS	P P P	P D D	D P P
ELEL5	BOTTLEBRUSH SQUIRRELTAIL	D D D	D D D	D D D
STCO4	NEEDLEANDTHREAD	P D P	P D D	U D D
FORBS				
COWR2	WRIGHT'S BIRDBEAK	U U U	U U U	D D D
LUAR3	SILVERY LUPINE	U D U	P P D	P P P
SPCO	SCARLET GLOBEMALLOW	D D D	P P P	D P P
PEST2	ROCKY MOUNTAIN PENSTEMON	D D U	D D D	D D D
PECR5	CRANDALL PENSTEMON	U D U	U D D	D D D
ERUM	SULFUR BUCKWHEAT	U D U	D D D	D D D
PHHO	HOODS PHLOX	U U U	U U U	U U U
COUM	BASTARD TOADFLAX	U U U	U U U	U U U
POAV	PROSTRATE KNOTWEED	U U U	U U U	U U U
PEPU7	ROCK GOLDENROD	U U U	U U U	U U U
SHRUBS & HALFSHRUBS				
AMUT	UTAH SERVICEBERRY	D D U	D D U	D D D
FERU	CLIFF FENDLERBUSH	U D D	U D U	U U U
EPTO	TORREY MORMONTEA	D P D	D P P	D D D
CHHU2	LOW RABBITBRUSH	U D U	U D N	D D D
YUBA	DATIL YUCCA	D D D	D D D	D D D
PUTR2	ANTELOPE BITTERBRUSH	P P D	P P P	P P P
CEMO2	TRUE MOUNTAIN MAHOGANY	D P U	D P P	D D P
TREES				
PIED	PINYON PINE	U U U	U U U	P P P
JUOS	UTAH JUNIPER	U U U	D D U	D P D